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Integrating Hepatitis B Prevention Into Sexually Transmitted Disease Services: U.S. Sexually Transmitted Disease Program and Clinic Trends—1997 and 2001

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Objective: **The objective of this study was to measure the progress since 1997 of implementing sexually transmitted disease (STD) clinic-based recommendations for hepatitis B prevention.**

Goal: **The goal of this study was to assess improvements since 1997 in hepatitis B prevention integration in STD services.**

Study: **Repeating a 1997 survey, in 2001, a survey was sent to state, municipal, and territorial STD program managers, previously surveyed clinic managers, and a national sample of 500 STD clinics.**

Results: **Large increases were found in the percentage of clinics offering hepatitis B vaccine (from 61% to 82%), providing education (49% to 84%), and accessing federal vaccine programs (48% to 84%). Twice as many program managers considered all patients with STDs eligible for hepatitis B vaccination. Lack of resources and patient noncompliance with vaccine series completion were program barriers.**

Conclusions: **Hepatitis B policies and vaccination and education efforts in STD clinics have improved; however, many barriers reported in 1997 remained in 2001.**

APPROXIMATELY 5000 U.S. DEATHS occur annually from hepatitis B virus (HBV)-related diseases, including cirrhosis and hepatocellular carcinoma.[1] In 2001, an estimated 78,000 persons in the United States were newly infected with HBV, a 65% decrease since 1990.[2] Largest declines in incidence have been among children ages 0 to 11 years, among whom incidence has decreased 94% since 1990.[3,5] Highest rates of infection occur in older adolescents and adults. After more than 10 years of decline, acute hepatitis B incidence among men aged >19 years and women aged ≥40 years has increased since 1999.[3] Sexual activity is responsible for approximately 50% of new HBV infections.[4–6] Therefore, an increased emphasis of the national strategy to eliminate HBV transmission is to target vaccinations for adolescents and adults at increased risk for infection.[7,8]

For 20 years, hepatitis B vaccination has been recommended for persons at increased risk of HBV infection, including persons diagnosed with sexually transmitted diseases (STDs), persons with multiple sex partners (>1 partner in the past 6 months), and men who have sex with men (MSM).[9] However, recent studies have shown that few individuals engaging in such high-risk sexual behaviors have been vaccinated.[10–13] Among persons with acute hepatitis B reported to the Centers for Disease Control and Prevention (CDC), 36% had been previously treated for an STD.[5] Several studies found that half or more of previously unvaccinated STD clinic clients accepted a free first dose of hepatitis B vaccine.[14,15] Thus, clinics offering STD services are key sites for HBV prevention and vaccination efforts aimed at high-risk individuals.[16]

In 1997, a survey was conducted to measure HBV prevention program activities among state, municipal, and territorial STD program and clinic managers, which found that 48% of STD program managers considered hepatitis prevention an STD program responsibility, but only 9% considered all STD clinic clients to be eligible for hepatitis B vaccination.[17] In 2001, a follow-up survey was conducted to determine whether hepatitis prevention policies, perceptions, and practices had changed.

Materials and Methods

An "STD clinic" was defined as a freestanding facility with the capacity to diagnose and treat STDs. The survey instruments used were modified versions of the 1997 survey. Two versions were designed, 1 for STD program managers and 1 for STD clinic managers. Surveys were sent to the respondents to the 1997 survey, including 64 state, municipal, and territorial STD program managers (responsible for overseeing multiple STD clinical service centers, coordinating multisite prevention activities, collecting and analyzing surveillance data) and 71 clinic managers (responsible for daily activities in STD clinics). Envelopes were addressed to a specific manager, when available, and included the title of the position in case the manager had changed. Because of the nonrandom selection of the small sample of clinic managers surveyed in 1997, an additional 500 clinic managers were randomly selected to be sent surveys in 2001. This sample was selected from a database of STD healthcare resources, including both federally funded STD clinics and nonfederally funded providers (N = 4128), and stratified by 3 levels of metropolitan statistical area (MSA). The 3 levels included "MSA–central city" referring to cities of 50,000 or more (urban area), "MSA–not central city" indicating a community adjacent to a central city (suburban area), and "not MSA," which means a rural area. After the initial survey was mailed, a reminder postcard was sent several weeks later to nonresponding clinics. To increase the response

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TABLE 1. Hepatitis Prevention Initiatives of Program Managers in 1997 and 2001

	1997 (n = 63)	2001 (n = 51)	*P* Value
Had developed/distributed written policy to prevent transmission of hepatitis B virus	13 (21%)	17 (33%)	NS
Considered hepatitis B vaccination to be a project responsibility	30 (48%)	28 (55%)	NS
Collaborated between STD and immunization program to begin hepatitis B vaccination effort	46 (73%)	40 (78%)	NS
Had policy that required/encouraged enrollment in Vaccines for Children program	17 (27%)	25 (49%)	0.01
Had policy that all STD clinics should offer hepatitis B vaccine in their clinics	16 (25%)	23 (45%)	0.02
Had policy that all STD clinics should offer hepatitis B education	17 (27%)	26 (51%)	0.004
Number of clinics that offered the vaccine in the program area	371 out of 1,542 (24%)	795 out of 1,222 (65%)	<0.001
Reported that "all" patients were eligible for vaccine	6 (9%)	13 (26%)	0.023
Number (%) of clinics that offered education of all clinics in the program area	327 (21%) of 1,542	665 (54%) of 1,222	<0.001
Used Vaccines for Children program resources	29 (46%)	34 (67%)	0.028

STD = sexually transmitted disease; NS = not significant.

rate, over the next several months, 2 more waves of questionnaires were sent to nonresponders.

Data collected from the 2001 survey were entered into SPSS Windows (release 10.0.5, 1999, SPSS, Inc.) and 1997 data were imported for comparison. For each sample, univariate and stratified analyses were conducted using means and medians for continuous variables and proportions for categorical variables. Open-ended questions were aggregated, coding themes developed, and responses summarized into categories.

Results

Program Managers

Fifty-one (80%) of 64 program managers responded. It was not known whether the same program managers completed the surveys in 1997 and in 2001. The median number of operational STD clinics reported within each STD program project was 8 (range, 0–159).

Current Vaccination Initiatives. One third of program managers reported that they had "developed and distributed a written STD clinic policy/plan to prevent transmission of HBV." Over one half (55%) considered hepatitis B vaccination to be a program responsibility, and 78% had collaborated with their immunization programs to establish a vaccination effort (Table 1).

In comparison to 1997, more program managers in 2001 stated they had a policy that all STD clinics should offer hepatitis B vaccine in their clinics and a policy to require or encourage enrollment in the Vaccines for Children (VFC) Program (Table 1). The reported percentage of clinics offering the vaccine in each program area also increased from 24% in 1997 to 65% in 2001 ($P < 0.001$).

In program areas where the state STD program had distributed a hepatitis B prevention plan, program managers reported that 88% of clinics offered vaccination. In comparison, only 50% of clinics offered the vaccine in areas where a prevention plan had not been developed ($P < 0.001$). Similarly, program managers reported a higher percentage of clinics offering the vaccine in areas where a current hepatitis B vaccination policy existed (90% vs. 21%; $P < 0.001$) and in areas where hepatitis B vaccine was considered a project responsibility (76% vs. 36%; $P < 0.001$).

When asked, "Who is eligible for hepatitis B vaccination in your clinics?" more program managers reported offering the vaccine to "all" patients in 2001 compared with 1997 (26% vs. 9%; $P = 0.023$). There were no significant increases between 1997 and 2001 within specific eligibility categories such as clients under age 18, household/sexual contacts of persons with hepatitis B, or clients who request the vaccine. Program managers also mentioned offering the vaccine to high-risk groups such as MSM, intravenous drug users (IDUs), and prison inmates.

Various sources of funding for hepatitis B vaccine were used. There were significant increases in reported use of VFC (46% vs. 67%; $P = 0.028$) and state funds (16% vs. 39%; $P = 0.005$) between 1997 and 2001. No differences were noted in use of funding from federally funded vaccine grant 317, city/county funds, Medicaid, self-pay or private insurance.

Patient Education Initiatives. In 2001, 51% of program managers reported having a policy for STD clinics to educate clients about HBV, compared with 27% in 1997 ($P = 0.004$). Program managers reported a higher percentage of clinics offering education in 2001 than in 1997 (54% vs. 21%; $P < 0.001$). The programs mainly used educational materials provided by the state health department (65%) or the CDC (61%), although a variety of nongovernmental sources were used as well. The following types of educational materials were used: brochures (71%), fact sheets (61%), healthcare provider counseling (43%), and posters (39%).

Planned Initiatives. In 1997, program managers had been asked if they were planning to implement or expand HBV prevention programs in their STD clinics. By 2001, 50% of those who said they planned to implement a vaccination policy reported having a policy. Even among those who stated they had no plans to implement a vaccination policy, 39% had a policy by 2001. In 2001, 53% reported that they planned to implement/expand education programs, and 43% were planning to expand vaccination programs.

Clinic Managers

In 2001, 71 surveys were sent to specific clinic managers (by name and by title) who had responded in 1997; 50 (70%) were completed. It was not known whether the same clinic managers

TABLE 2. Barriers to Implementing Hepatitis B Vaccine Programs, 2001

	Program Managers (n = 51)	Clinic Managers (n = 367)
	Mean Score*	Mean Score*
Lack of funding for vaccine	1.95	2.33
Lack of resources to track patients for vaccine series completion	2.17	2.87
Client (non)compliance with completion of vaccine series	2.40	2.52
Lack of client awareness of hepatitis B vaccination	2.82	2.95
Lack of personnel to administer vaccine	3.09	3.81
Hepatitis B vaccination is not a program priority	3.39	3.72
Parental consent issues with minors	3.72	3.56
Lack of provider awareness of hepatitis B vaccine	3.74	4.47
Client mistrust of vaccine programs	4.10	3.92

*Scale = 1 (major barrier) to 5 (not a barrier).

completed the surveys in 1997 and 2001. Of the 500 randomly selected clinics sent surveys, 71 were returned undeliverable, reducing the sample to 429. Of these, 341 clinics (79%) returned completed surveys, 24 of which were returned blank with notations that STD services were not currently offered in these clinics. This resulted in a final sample of 317 valid surveys from the larger clinic manager sample.

The smaller and larger clinic manager samples were compared to determine whether responses differed significantly as a result of the difference in selection process for the 2 samples. Certain characteristics of the samples differed, including percent urban (64% in the replicated sample, 40% in the larger sample) and percent VFC sites (44% in the smaller sample vs. 61% in the larger). Although these characteristics differed, there were no differences in hepatitis B vaccine provision, education or planned initiatives. Data from the 2001 survey will be presented as a merged sample of 367 clinic manager respondents, including both the replicated sample and the larger sample.

Current Vaccination Initiatives. In 2001, 82% of clinic managers reported offering hepatitis B vaccine, an increase from 61% in 1997 ($P < 0.001$). Between 1997 and 2001, there was an increase in the number of clinics offering the hepatitis B vaccine to "all" clients (5% vs. 45%; $P < 0.001$). Clinic managers confirmed the program managers' reports that vaccine was offered to high-risk patients, including IDUs, MSM, patients with chronic liver disease and/or hepatitis C, and employees in high-risk occupations.

There were no significant differences between 1997 and 2001 in VFC enrollment. One half of the clinic managers in 2001 reported receiving materials to facilitate enrollment in the VFC program. Of those, 85% were VFC providers. Of those who did not receive materials, only 19% were VFC providers ($P < 0.001$). Of VFC sites, 95% percent offered hepatitis B vaccine, compared with only 60% of the non-VFC sites ($P < 0.001$).

Among clinics offering vaccination, the use of state/federal funds (including VFC) to acquire vaccine significantly increased from 48% in 1997 to 84% in 2001 ($P < 0.001$). Client insurance used for vaccine purchase also changed from 1997 to 2001; increases occurred in percent of clinics using client self-pay (7% vs. 46%; $P < 0.001$) and Medicaid (7% vs. 23%; $P = 0.018$), although differences were much smaller if only the 2001 replicated sample is compared (20% self-pay, 10% Medicaid). No differences were noted in use of city/county funds or private insurance between 1997 and 2001.

Current Education Initiatives. Patient education about HBV increased during this time as well. In 1997, 49% of clinics surveyed educated clients, compared with 84% in 2001 ($P < 0.001$). Clinic managers reported using materials from state health departments (72%), the CDC (57%), and county health departments (34%) most often.

Planned Initiatives. In contrast to plans reported by program managers, few clinic managers were planning to implement or expand HBV prevention programs in their clinics because most already offered vaccination and education programs. Only 4% of clinics planned to implement education programs, and 3% planned to implement vaccination programs. Of the 6 clinic managers who had planned in 1997 to begin offering the hepatitis B vaccine to "all" clients, half were doing so and the other half were offering the vaccine to some clients. Six of the 7 clinics (86%) with plans to implement a patient education program in 1997 were offering education to patients in 2001. Even among those who had no plans to implement an education program, 63% (5 of 8) reported providing education by 2001.

Barriers. Program managers and clinic managers used a 5-point scale (in which 1 represented "major or significant barrier" and 5 indicated no barrier) to rate a series of items as obstacles to implementing hepatitis B vaccination programs in their STD clinics (Table 2). The same top three barriers were reported by program managers and by clinic managers in 1997 and 2001: lack of funding, lack of resources to track patients, and client (non)compliance with vaccine series completion. Clinic and program managers were asked specifically what they thought would increase hepatitis B vaccine utilization in their STD clinics. The most frequent responses related to funding and increased vaccine availability. Increased educational programs and the ability to administer vaccine to minors without parental consent were also frequently cited.

When asked, "What could CDC do to help?," clinic and program managers listed hundreds of suggestions, which were aggregated and summarized as follows: provide funding, supply the vaccine, provide patient education and information, develop awareness campaigns, educate healthcare providers, provide tests, provide resources for additional staff, and issue guidelines.

Discussion

The majority of the STD program managers in the United States now consider hepatitis B vaccination an "STD project responsibility." From 1997 to 2001, they, and the clinic managers in their jurisdictions, report increased availability of hepatitis B vaccine to patients seeking STD care in the United States, as well as an increase in the number of programs and clinics with broad criteria

for immunizing. The initiative for program integration appears to be occurring at the local level where programs are implemented, because both in 1997 and 2001, clinic managers reported more hepatitis B immunization and education being provided than program managers were aware of.

The 1998 and 2002 STD Treatment Guidelines[18,19] call for vaccination of all persons attending STD clinics and those known to be at high risk for HBV infection. Other federal initiatives integrating hepatitis B immunization into STD services include STD prevention training centers that incorporate hepatitis prevention messages into training for STD treatment providers; and viral hepatitis integration projects, which provide vaccination, education, and counseling in STD clinics and other sites in several U.S. states and cities.[20,21] These factors may have influenced the provision of hepatitis B vaccine in STD clinics. Also, one of the best predictors of vaccine availability in clinics was being a VFC provider. Enrollment of all STD clinics in the VFC program could further enhance integration efforts.

Although the majority of clinics offered hepatitis B immunization and education, there were still many perceived barriers to the institution of a hepatitis B immunization program. The fact that fewer than half of program managers and clinic managers reported offering the vaccine to all STD clinic clients revealed an institutional barrier to increased vaccination uptake even when programs are in place. In addition, program and clinic managers continued to note lack of resources (for vaccine and tracking) and noncompliance as significant barriers to implementing vaccination programs. Some recommendations made by managers for increasing vaccine utilization in clinics have already been addressed either at a national or local level, including increasing educational programs, materials, and information for clients and for providers; administering vaccine to minors without parental consent; and issuing guidelines. Better communication may be necessary to assure that available educational programs are shared among programs, that strategies to immunize minors are disseminated, and that guidelines such as the STD treatment guidelines reach their intended audiences.

Other programs recommended by managers, including increasing funding, offering free or reduced cost vaccine to adults, and implementing a campaign to increase public awareness, have not yet been created. New programs may be needed to assure vaccine availability and acceptance among targeted populations.

STD services are provided in a variety of clinic types: standalone STD clinics, reproductive health clinics, health departments, and others. We did not distinguish among these in this survey, because the CDC has recommended hepatitis B vaccine be offered to all clients of STD clinics. More targeted recommendations and programs could be made for STD clients if clinics could be stratified by type.

The data collection process had several limitations; first, we do not know how the nonresponding clinics' answers might have differed from this sample of respondents. However, the percentages of responding clinics from each MSA reflected the random clinic sample percentages, indicating general representation of our sample to the clinic population from which it was drawn. Second, although our results show that STD clinics offer vaccine to their clients, we do not know whether their clients are actually being vaccinated. Additional surveys would be needed to determine actual numbers and percentages of STD clinic clients receiving 1 or more doses of hepatitis B vaccine. Third, events at the federal and local levels may have impacted the delivery of hepatitis B vaccine at STD clinics since data collection began in 2001. Anecdotal reports from the field suggest that vaccination rates may have increased. New federal STD treatment guidelines were published in 2002, reiterating the recommendation for vaccination. Communications increased within the CDC between the CDC's Divisions of Viral Hepatitis and STD Prevention. Also, since 2003, the Division of Viral Hepatitis initiated a funding partnership with the National Coalition of STD Directors to conduct regional meetings to develop best practices, policies, and recommendations concerning integration of viral hepatitis. At the same time, the CDC stopped directly funding projects to deliver hepatitis B vaccine in STD clinics. Repeating a survey in 2005–2006 will enable better evaluation of changes in hepatitis B vaccination at STD clinics.

Hepatitis B immunization has been recommended for persons diagnosed with STDs since the vaccine became available in 1982.[22] This survey suggests that this recommendation is increasingly being implemented through offering vaccination to clients of STD clinics. However, substantial further progress will be needed to meet the Healthy People 2010 goal that 90% of STD clinics routinely offer hepatitis B vaccines to all STD clients.[23] In particular, the significant barriers of lack of funding for vaccine and lack of immunization tracking methods must be overcome.

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